



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

H.n

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/673,289

09/30/2003

Junichi Hoshi

03500.017625

4738

5514

7590

09/11/2006

FITZPATRICK CELLA HARPER & SCINTO
30 ROCKEFELLER PLAZA
NEW YORK, NY 10112

EXAMINER

SUNG, CHRISTINE

ART UNIT

PAPER NUMBER

2884

DATE MAILED: 09/11/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/673,289	HOSHI, JUNICHI	
	Examiner	Art Unit	
	Christine Sung	2884	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 August 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Response to Amendment

1. The amendment filed on August 25, 2006 has been accepted and entered.

Claim Objections

2. Claims 4, 5 and 9 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim.

Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 4 and 5 contain subject matter that is already claimed in claim 1. Claim 5 is objected to for being dependent on an already objected claim.

3. Claims 4-6 and 9-10 are objected to because of the following informalities:

4. Claim 4 recites the limitation "the radiation beam" in line 2 of the claim. There is insufficient antecedent basis for this limitation in the claim.

Claim 5 is objected to for being dependent on an already objected claim.

Claim 6 recites the limitation "the radiation beam" in line 2 of the claim. There is insufficient antecedent basis for this limitation in the claim.

5. Claims 9-10 recite the limitation "the given distance" in line two of both claims. There is insufficient antecedent basis for this limitation in the claim.

6. Claims 4, 6 and 9 recite the limitation "image pickup sensor" in the preambles of the claims. There is insufficient antecedent basis for this limitation in the claim.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Art Unit: 2884

8. Claim 6 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 states that the incident radiation is Infrared Radiation, however, claim 6 (which depends on claim 1) attempts to further limit claim 1, by claiming that the incident radiation is X-ray radiation.

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

10. Claims 1-2, 4-5 and 7-12 are rejected under 35 U.S.C. 102(e) as being anticipated by Suzuki (US Pre Grant Publication 2003/0025160 A1).

Regarding claim 1, Suzuki discloses a back side incident type image pickup sensor (Figure 3) having on the front side of a semiconductor substrate (element 32) a photoelectric conversion portion (element 37) and an electric circuit (“peripheral circuit portion”), and having on the back side of the semiconductor substrate an opening (element 33A) through which IR light (paragraph [0043]) is incident, the incident light being detected by the photoelectric conversion portion (element 37) formed on the front

Art Unit: 2884

side of the semiconductor substrate (see figure 3). Suzuki further discloses that the distance (several hundred microns, see figure 3) is greater than $0.303 * 10$ microns (see figure 3) = 3 microns. Therefore several hundred microns is greater than approximately 3 microns.

Regarding claim 2, Suzuki discloses that the substrate can be made of silicon (paragraph [0058]).

Regarding claim 4, Suzuki discloses that the radiation beam is IR light (paragraph [0043]).

Regarding claim 5, Suzuki discloses that the sensor detects IR light (see paragraph [0043]) but does not specify the claimed range. However, by definition, IR light is radiation defined between 700nm- 1 mm.

Regarding claim 7, Suzuki discloses that the photoelectric conversion portion is composed of a photodiode (element 37).

Regarding claim 8, Suzuki discloses that the electric circuit (element “peripheral circuit portion”) serves as one of a driver circuit for driving the photoelectric conversion portion (paragraph [0003]) and a signal processing circuit for processing a signal from the photoelectric conversion portion (paragraph [0003]).

Regarding claims 9-10, Suzuki discloses that the distance (several hundred microns, see figure 3) is greater than $0.303 * 10$ microns (see figure 3) = 3 microns. Therefore several hundred microns is greater than approximately 3 microns.

Regarding claim 11, Suzuki does not explicitly state using a dummy pixel, but however discloses a functionally similarly element that is formed at an offset portion (Figure 3, element PWELL) between the electric circuit and opening (see figure 3) for removing electric charge in the offset portion. Although Suzuki does not explicitly state that it is a dummy pixel, the structural element is present in the invention as disclosed by Suzuki.

Regarding claim 12, Suzuki discloses a diffusion region (figure 3, element PWELL) disposed between the electric circuit and the sensor on the front side of the substrate. Suzuki further discloses that electric charges are read out over the diffusion region opening (see figure 3, PWELL closest to electric circuit side). Although Suzuki does not explicitly state the claimed impurity concentration as well as conductivity types, it would be obvious to one having ordinary skill in the art at the time the invention was made to have created such a gradient in order to efficiently collect and readout electric charges generated by the detector.

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were

Art Unit: 2884

made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

13. Claims 3 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki (US Pre Grant Publication 2003/025160).

Regarding claim 3, Suzuki discloses using various etching techniques (see figures 7 and 8) whereby the elements of figures 3 and 9 are formed. Although Suzuki does not explicitly state that the substrate is reduced in thickness after the photo conversion portion is formed, it is obvious that during the conventional etching techniques the substrate on which the photo conversion element is formed is reduced in thickness in order to accommodate the conversion elements.

Regarding claim 6, Suzuki discloses detecting various types of radiation {see paragraph [0043], visible, infrared, and UV). Suzuki does not explicitly state detection of x-ray, such radiation is conventionally detected using solid-state detectors. Therefore one of ordinary skill in the art would be motivated to detect x-rays with the invention as disclosed by Suzuki for applications where high-energy radiation is detected.

Response to Arguments

14. Applicant's arguments filed August 25, 2006 have been fully considered but they are not persuasive.

15. In response to applicant's arguments, the recitation "a backside incident type fingerprint sensor" has not been given patentable weight because the recitation occurs in

Art Unit: 2884

the preamble. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951).

According to MPEP section 2111.02 [R-3], “If the claim preamble, when read in the context of the entire claim, recites limitations of the claim, or, if the claim preamble is necessary to give life, meaning, and vitality’ to the claim, then the claim preamble should be construed as if in the balance of the claim.” *Pitney Bowes, Inc. v. Hewlett-Packard Co.*, 182 F.3d 1298, 1305, 51 USPQ2d 1161, 1165-66 (Fed. Cir. 1999). See also *Jansen v. Rexall Sundown, Inc.*, 342 F.3d 1329, 1333, 68 USPQ2d 1154, 1158 (Fed. Cir. 2003).

However, if the body of a claim fully and intrinsically sets forth all of the limitations of the claimed invention, and the preamble merely states, for example, the purpose or intended use of the invention, rather than any distinct definition of any of the claimed invention’s limitations, *then the preamble is not considered a limitation and is of no significance to claim construction.* *Pitney Bowes, Inc. v. Hewlett-Packard Co.*, 182 F.3d 1298, 1305, 51 USPQ2d 1161, 1165 (Fed. Cir.1999). See also *Rowe v. Dror*, 112 F.3d 473, 478, 42 USPQ2d 1550, 1553 (Fed. Cir.1997).

Here, applicant has amended the claims to claim a fingerprint sensor, which merely describes the intended use of the invention, as none of the subsequent limitations limit the sensor to fingerprint detection (i.e. no limitations directed to what information is

Art Unit: 2884

detected that particularly limits claims to fingerprint detection, such as counting the number of grooves or arches, etc.).

Conclusion

16. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christine Sung whose telephone number is 571-272-2448. The examiner can normally be reached on Monday- Friday 7-3 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Porta can be reached on 571-272-2444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2884

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

CS

Christine Sung
Examiner
Art Unit 2884


OTILIA GABOR
PRIMARY EXAMINER